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### Multiple myeloma cells Graphs and Figures inhibit adipogenesis, increase senescencerelated and inflammatory gene transcript expression, and alter metabolism in preadipocytes

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# Multiple myeloma cells inhibit adipogenesis, increase senescence-related and inflammatory gene transcript expression, and alter metabolism in preadipocytes

Michaela R. Reagan, PhD, Heather Fairfield, MS, Samantha Costa, BS, Carolyne Falank, PhD, Mariah Farrell, MS, Connor S. Murphy, BS, Anastasia D'Amico, BS, Heather Driscoll, PhD

## Introduction

- Bone marrow adipocytes can support tumor cell proliferation and progression to drug resistance.
- Here we directly investigated how MM cells affect the differentiation capacity and gene expression profiles of preadipocytes and BM-MSCs.

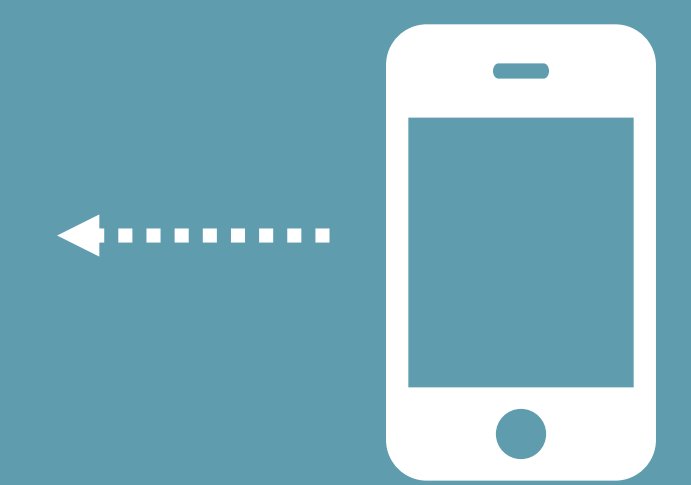
## Methods

- Cell Lines & co-cultures:** mouse and human MSCs and preadipocytes were co-cultured with myeloma cell lines separated via transwell membrane prior to adipogenesis.
- Phenotyping & Gene expression:** lipid content was assessed with oil red-o staining, gene expression differences determined by microarray and key results confirmed with qPCR.
- Analysis of External MM-MSC and NBM-MSCs Dataset:** Microarray gene expression data from Corre et al. was accessed for MSCs derived from normal bone marrow (NBM; n=7) or MM (n=6) patient BM.

## Results

- Exposure to myeloma cells modulated adipocyte progenitors by specifically inhibiting adipogenic differentiation capacity, skewing metabolism-related transcripts, and increasing the expression of inflammatory cytokines.
- We uncovered key chemokines produced by MSCs, differentiating MSCs, and committed adipocytes after MM exposure.

# Myeloma cells alter metabolism & induce senescence in adipocyte-lineage cells, suggesting that senescence-associated proteins are involved in multiple myeloma.



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## Graphs and Figures

